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The Inquiry Role Approach: Research on Classroom Teaching and Learning.

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This brochure, designed to acquaint teachers in Kansas City area public and parochial schools with the Inquiry Role Approach (IRA) to Biological Sciences Curriculum Study (BSCS) courses, prepares for their cooperation with the Mid-Continent Regional Development Laboratory (McREL) in testing an IRA model during the 1968-69 school year. Four program objectives are listed: to provide opportunity for pupils to develop and use social and inquiry skills which enable them to participate as responsible members of a team engaged in formulating and testing biological concepts and hypotheses, to provide assistance to the teacher in his guidance of student learning by providing resource materials and classroom organization designed to provide a climate in which his role is changed from information disseminator to learning situation manager, to help develop teacher skills in developing study guides and other curricular aids which facilitate the continued development of pupil inquiry skills and attitudes and student responsibility for his inquiry activities, to develop a packet of tested materials and classroom procedures which will be available for school and district adoption. Included are general notes on the methodology, a diagram of sequential steps in the IRA, an overview of the 5-year IRA project, and 18 pages of student comments on IRA. (JS)

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THE INQUIRY ROLE APPROACH

Research on

CLASSROOM TEACHING AND LEARNING

ED025485

Mid-Continent Regional Development Laboratory
Kansas City, Missouri

SP 002083

This Brochure

is an invitation for cooperation and mutual assistance between your school district and McREL in conducting and evaluating the Inquiry Role Approach. In this approach, relationships are examined among teacher patterns, student abilities and curriculum experiences that are designed to give students more responsibility for their own learning through inquiry activities. The school year 1968-1969 is devoted exclusively to first year BSCS Biology in Kansas City area public and parochial schools. Your cooperation is gratefully acknowledged.

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RESEARCH ON CLASSROOM TEACHING, LEARNING AND INQUIRY BEHAVIOR

Given students enrolled in BSCS biology courses and teachers who evidence a willingness to use and understand the purposes of curricular materials developed for the Inquiry Role Approach (IRA), we can study relationships between teaching practices, pupil problem-solving activities, and selected measurements of achievement. What are the relationships between combinations of teaching patterns, pupil abilities, and student experiences that are designed to promote scientific inquiry?

OBJECTIVES OF THE INQUIRY ROLE APPROACH TO BSCS BIOLOGY

The objectives of the program are four-fold:

1. To provide opportunity for pupils to develop and use social and inquiry skills which enables them to participate as responsible members of a team which is engaged in formulating and testing biological concepts and hypotheses.

2. To provide assistance to the teacher in his guidance of student learning through the inquiry role approach by providing resource materials and classroom organization designed to provide a climate in which his role as teacher is changed from disseminator of information to "manager of a learning situation."

3. To help develop teacher skills in developing study guides and other curricular aids which facilitate the continued development of pupil inquiry skills and attitudes and student responsibility for his inquiry activities.

4. To develop a packet of tested materials and classroom procdures which will be available for school and district adoption.

Methodology

In order to help students assume more responsibility for learning the teacher moves gradually from an imparter of information to a manager of the classroom situation.

The teacher increases his perceptions of the curricular needs of pupils engaged in the problem solving activities of inquiry, shares and enlarges his repertoire of classroom experiences through workshops and consultation with McREL and school personnel, and contributes to the combined efforts of all concerned to learn and develop means to assess and evaluate pupil growth in the important skills and attitudes of inquiry.

The teacher works to:

1. Delegate responsibility to students in role positions.

2. Develop effective teamwork in balanced team of four students.

3. Use and create study guide at increasingly more sophisticated levels of inquiry.

4. Act as a resource person to facilitate the inquiry activities of students.

Some of the basic techniques or tools that the teachers learn to use are:

1. Guides for helping students learn the inquiry roles.

2. Sociometric techniques for creating teams that are evenly balanced.

3. Card sort of social and study skills for helping students develop a keener perception of their strengths and weaknesses.

4. Model Teacher Communication Sheets and prepared guides problems to use in inquiry activities and to provide guidelines for creating additional guide problems.

5. Supplementary materials such as: "Invitations to Enquiry", single loop films, and inquiry interaction manuals provide additional resource help for students.

At the close of the year, the teacher should be in the position of acting in a guidance and management role in situations where the students are writing and critiquing their own research projects.

WHAT IS REQUESTED

SCHOOL DISTRICT

We request permission to work with select teachers in the Kansas City area who evidence a willingness to participate in the BSCS-IRA program. Assuming twenty to twenty-five teachers indicate their willingness to attend a pre-school conference, use and critique curricular materials to be used in conjunction with BSCS course materials, an effort will be made to implement a program designed to foster self-directed learning through pupil inquiry.

CLASSROOM TEACHER

1. Approximately 120 study guides are to be used during the school year to assist the teacher as he guides pupils to use increasing skills of inquiry as an integral part of the learning activities of the classroom.

2. A battery of three tests will be administered in early October and again in May which measure comprehension of biological concepts and ability to evaluate inquiry skills and processes.

3. Two experimental tests are being developed by McREL research and evaluation personnel to assess pupil skills in self-directed inquiry. A single administration of these two instruments is projected in May subject to satisfactory evidence of test development and approval of school and McREL personnel.

4. Teachers will be requested to evaluate study guides for clarity and difficulty to pupils and to identify problems encountered while using these in the classroom. Teachers will also be requested to contribute to the overall task of evaluating student progress toward increased comprehension and understanding of both biological concepts and inquiry skills.

5. Research personnel will visit each classroom during the school year and will be available for conferences. Classrooms will be observed by trained personnel. No special preparation should be made for their visits.

6. Workshops are planned bi-monthly to provide teachers and research personnel the opportunity to discuss progress and problems to date.

7. Teachers are asked to provide information of a demographic nature about the school and classroom. Size of school population and number of science courses are two examples of the kinds of information requested.

8. The teacher will also be requested to respond to a questionnaire which includes statements of leadership activities of the school principal as perceived by the teacher.

NOTES TO ADMINISTRATORS AND CURRICULUM SPECIALISTS

1. Rate of Subject Matter Coverage

The proposed BSCS-IRA program has been reviewed by the United States Office of Education, McREL Staff, science educators. While the initial emphasis is placed on the early development of social and study skills required for individual and team inquiry effort, there is no attempt to neglect the coverage of biological concepts and knowledge as outlined in BSCS materials. In some cases due to the early emphasis to establish inquiry roles, there may be a temporary lag in the progress through BSCS materials. However, the progress of covering the BSCS content should later accelerate with increased student facility to manage their inquiry learning experiences. It is not anticipated that school personnel will need to change their end-of-the-year expectations of the amount of subject matter to be covered.

2. Cost

The cost of curricular materials and testing programs are to be covered by McREL funds allocated to the IRA program.

3. Duration of Project

The initial testing of materials and methods are for the 1968-1968 school year. Further refinement and development is projected for 1969 and beyond. The request for cooperative assistance is, however, directed to the activities of this school year.

4. Scheduling Requirements

Special scheduling considerations beyond those made for BSCS biology courses are not required.

5. Teacher Load

The cooperating teacher does assume additional responsibilities and work-load while participating in IRA development. Trial testing and modification of curricular materials, attendance at pre-school and bi-monthly workshops, administration of tests and the guidance of pupils in the acquisition of inquiry skills and attitudes require additional energy and time of the teacher. Cooperating teachers should receive full recognition and consideration for their professional services to the IRA program.

6. Classroom Observation

The method of classroom observation requires only paper and pencil notes made by trained personnel. Observers sit as unobtrusively as possible near teams of four pupils engaged in inquiry activities. No special arrangements are required; to the contrary, teachers and pupils should experience no difficulties and are encouraged to use the teaching and learning practices natural to their classroom.

7. Confidentiality of Reports

Names of school districts, district personnel, teachers and pupils will not be included in reports to school districts, school personnel or to the Office of Education. One exception may be made upon request. Final achievement scores of individual students may be made available upon the written request of the school principal and acknowledgement of the district supervisor.

EXPECTED OUTCOMES OF THE PROGRAM
1968-1969

WHAT IS IN IT FOR YOU !

1. Those school districts whose cooperation made the program a reality will receive summary reports of results and findings.

2. School districts may request individual pupil test scores obtained from the two administrations of BSCS Comprehensive Test, Porcesses of Science Test (POST), and the Watson-Glaser Critical Thinking Appraisal.

3. School districts may also request additional use of these tests to a limited number of teachers in other classrooms or schools of the district for comparative purposes. Although specific numbers of pupils and classrooms must be detailed with each district, test manuals and scoring services can be provided to obtain reasonable sampling. School districts would incur a minimal expense for answer sheets and data cards.

4. The satisfaction of supporting research on teaching and learning and contributing to our professions understanding of these important variables.

WHAT IS IN IT FOR US!

1. The cooperation of the school district in obtaining access to the classroom for testing and observational purposes.

2. The support of the classroom teacher which is vital to the implementation of any program.

3. The refinement of instruments which assess pupil skills in self-directed inquiry.

4. The collection of data that may increase understanding of the processes of inquiry as utilized by pupils in first year biology.